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(56) Documents Cited
EP 0813989 A1 **EP 0330767 A1** **WO 99/57648 A**
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(54) Abstract Title
A control system for a vehicle

(57) A control system for a vehicle is disclosed, the control system having a driver operated input means in the form of a handwriting recognition apparatus 10 which includes a matrix of pressure sensitive devices 14 and is arranged in use to translate hand-written instructions inputted by a user into control commands for one or more vehicle features e.g.lighting, air conditioning, tuning a radio, playing a tape, direction indication, lamp operation. Apparatus 10 may be a flexible pad located on the steering wheel, may be located in front and behind the steering wheel, may be on the facia, and may be disabled if the steering wheel is turned more than a predetermined angle from the straight ahead position.

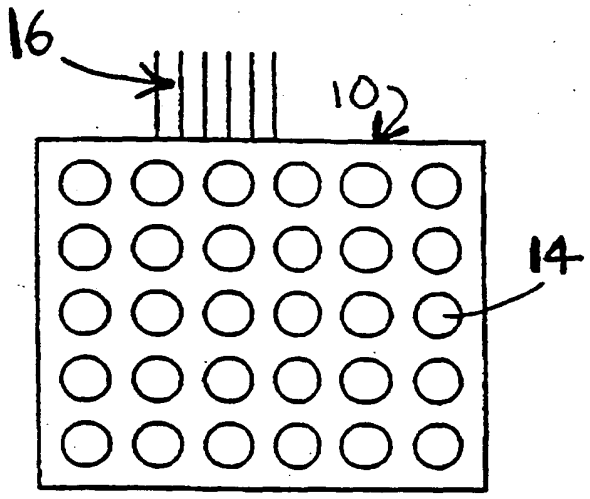

Fig. 2.

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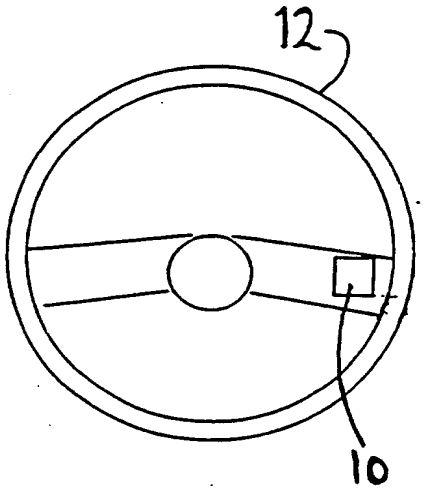

Fig. 1

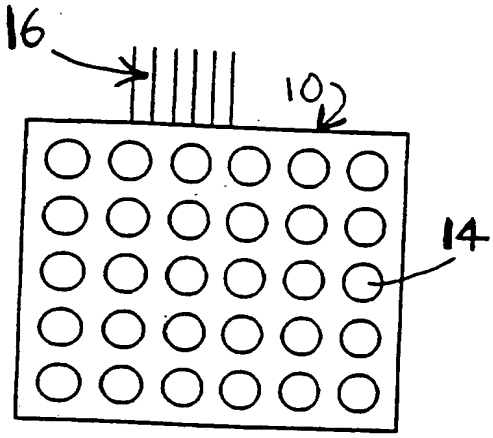

Fig. 2

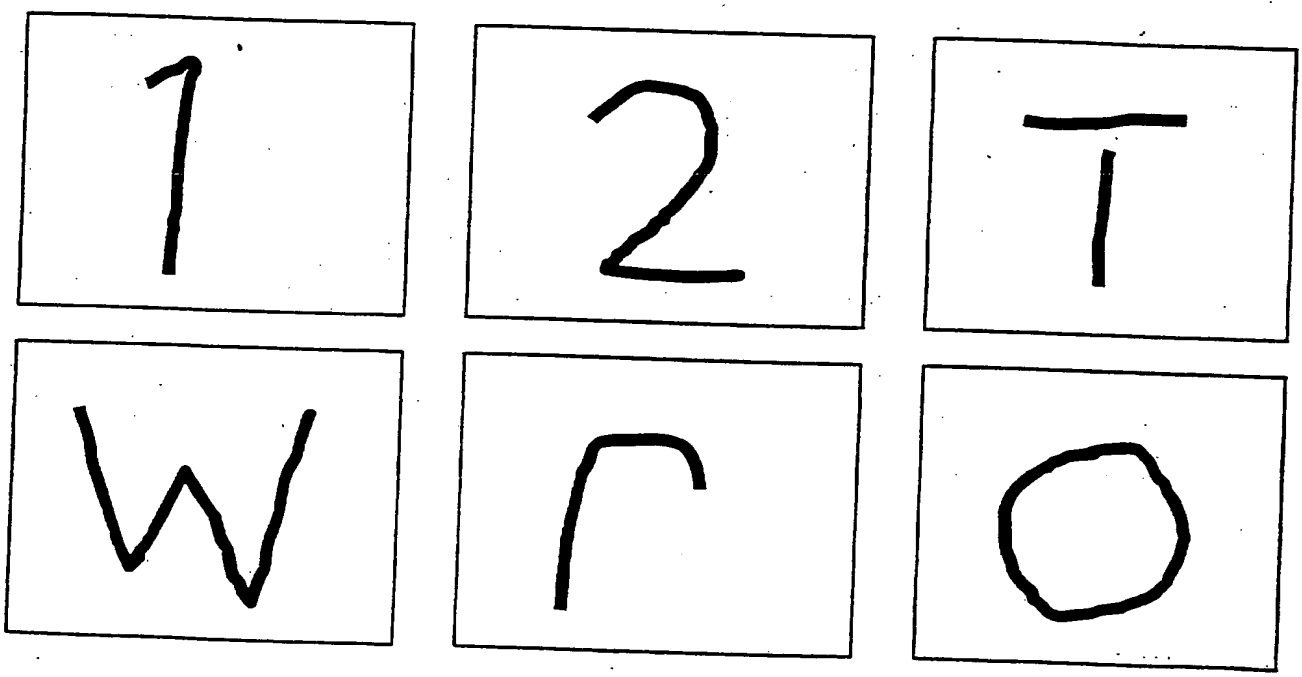

Fig. 3

A Control System

This invention relates to control systems and in particular to a control system for a vehicle, the system including a driver operated input means for controlling one or more vehicle features.

The electrical and electronic complexity of cars is increasing. A driver may wish to operate any number of sub-systems which could be managing anything from vehicle lighting and air conditioning to navigation and communications networks. This has resulted in a proliferation of controls appearing on and around the steering wheel which may prove confusing or distracting to a driver whilst driving the car, which may in turn reduce overall safety.

It is an object of this invention to provide an improved control system.

Accordingly, the invention provides a control system for a vehicle, the system including a driver operated input means for controlling one or more vehicle features, wherein the input means comprises a handwriting recognition means arranged in use to translate hand-written instructions inputted by a user into control commands for said one or more features.

The handwriting recognition means may be positioned within easy reach of a driving position, which may be in the region of a fascia panel of the vehicle or in the region of a steering control means of the vehicle.

The handwriting recognition means may be substantially disabled when the steering control means is moved by a predetermined amount beyond a straight ahead position.

The handwriting recognition means may be, with respect to a further driver operated input means, a supplementary or parallel input means.

The handwriting recognition means may comprise a matrix of pressure sensitive devices.

The handwriting recognition means may be arranged to recognise one or more characters at least in part from a time-based relationship between the formation of, and/or the start and finish points of, different portions of the one or more characters.

The invention will now be described by way of example only and with reference to the accompanying drawings, in which:

Figure 1 is a schematic diagram of part of a control system according to the invention;

Figure 2 shows part of the control system of Figure 1 in greater detail; and

Figure 3 shows examples of data input using the control system of Figures 1 and 2.

Referring to the figures, a vehicle includes a driver operated input means for controlling one or more vehicle features, the input means being in the form of a handwriting recognition apparatus 10. The handwriting recognition apparatus 10 is positioned on a steering control means, which is in the form of a steering wheel 12, and is in such a position that it 10 lends itself easily to a stylus fashion of character entry using a user's thumb.

The handwriting recognition apparatus 10 includes a matrix of pressure sensitive pads 14 which are connected by a series of control lines 16 to a vehicle control module (not shown) which implements commands inputted by a user through the handwriting recognition apparatus 10.

Referring now in particular to Figure 3, six examples are given of the sort of alpha-numeric characters which can be entered using an X-Y co-ordinate system to process signals from the matrix 14. Depending on user preference and system complexity, it may prove desirable or necessary to use letters from different languages or other forms of characters such as shapes or symbols.

Different actions across the matrix 14 or different letters, numbers, shapes or symbols are used to represent tuning a radio, playing a tape, direction indication, lamp operation and other such functions which in some known vehicles each require a substantially independent input.

In a modification to the invention, the handwriting recognition apparatus may be in the form of a flexible pad and could be wrapped around sections of the steering wheel 12 or placed in different sections, such as in front or behind the steering wheel 12, which may prove desirable for thumb and forefinger control.

In a further modification to the invention, it would be possible to mount the handwriting recognition apparatus 10 somewhere else in the vehicle which may, for example, also be within easy reach of a driving position. Such a position might be found on a fascia of the vehicle.

In the event that the handwriting recognition apparatus 10 is mounted on the steering wheel 12, it may prove desirable to disable the apparatus 10 if the steering wheel is at certain predetermined positions such as, for example, if it

were to be turned beyond a predetermined steering angle away from a straight ahead position. This may prove desirable in cases where it is considered unsafe for a driver to be entering such data whilst steering around a corner.

The handwriting recognition apparatus 10 may be used as a supplementary input means. In this event, a vehicle would retain at least the manual inputs most essential for safe driving such that control of their features is still available if, for example, the handwriting recognition apparatus 10 is disabled through steering angle.

In a further modification to the invention, the handwriting recognition means is arranged in use to recognise one or more characters at least in part from a time-based relationship between the formation of, and/or the start and finish points of, different portions of the one or more characters. By way of example, the formation of the upper case letter "T" will often include a substantially horizontal stroke from left to right across an upper region of the matrix 14, followed by a substantially vertical stroke in a central portion of the matrix 14. This vertical stroke may or may not contact the horizontal stroke, but it would be possible to programme the system to recognise the two movements as forming the letter "T" on condition, for example, that the two strokes occur in that order and within a predetermined period of time of each other. Similar techniques could be used for the recognition of other characters, e.g. "K", "R", "F", "X" and "Q".

This invention may also prove convenient to vehicle users who suffer from certain disabilities. If, for example, a user is speech impaired this invention may prove more convenient than voice control. The manual dexterity required for the operation of many conventional switches may hinder some physically handicapped users, who may instead find entering commands, symbols or data through the

matrix 14 to be a more convenient system. It would also be possible to programme the vehicle control module to recognise characters customised to suit any user's preference, language or disability.

CLAIMS

1. A control system for a vehicle, the system including a driver operated input means for controlling one or more vehicle features, wherein the input means comprises a handwriting recognition means arranged in use to translate hand-written instructions inputted by a user into control commands for said one or more features.

2. A system according to Claim 1, wherein the handwriting recognition means is positioned within easy reach of a driving position.

3. A system according to Claim 1 or Claim 2, wherein the handwriting recognition means is positioned in the region of a fascia panel of the vehicle.

4. A system according to Claim 2, wherein the handwriting recognition means is positioned in the region of a steering control means of the vehicle.

5. A system according to Claim 4, wherein the handwriting recognition means is substantially disabled when the steering control means is moved by a predetermined amount beyond a straight ahead position.

6. A system according to any preceding claim, wherein the handwriting recognition means is, with respect to a further driver operated input means, a supplementary or parallel input means.

7. A system according to any preceding claim, wherein the handwriting recognition means comprises a matrix of pressure sensitive devices.

8. A system according to any preceding claim, wherein the handwriting recognition means is arranged to recognise one or more characters at least in

part from a time-based relationship between the formation of, and/or the start and finish points of, different portions of the one or more characters.

9. A control system for a vehicle substantially as described herein and with reference to the accompanying drawings.

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Claims searched: 1-8 **Date of search:** 31 March 2000

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Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): F2Y YTA YTB

Int Cl (Ed.7): B60K 37/06 B60R 16/00, 02 G06F 3/033 G06K 11/06, 08

Other: Online:WPI,EPODOC,JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP 0813989 A1	(Renault) see whole document & WPI abstract access. no.98-065669/07	1, 2, 4, 7
X	EP 0330767 A1	(Pioneer Electronic) see whole document	1, 2, 8
X, E	WO 99/57648 A	(ART)	1, 2
X	JP 11105646 A	(Fuji) see abstract	1, 2

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